<center>**REMARKS**</center>

With this Response, Claims 1-9, 12-19 and 21-22 are amended. Claims 10, 11, 20 and 23 are cancelled. Claims 1-9, 12-19 and 21-22 are pending.

<center>**SPECIFICATION**</center>

Per examiner's requirement, the title of the invention is changed to "Method for balancing load between processors in a multi-processor environment."

<center>**CLAIM OBJECTIONS**</center>

Claims 10, 11 and 20 are cancelled. The objections pertaining to these claims are now moot.

<center>**CLAIM REJECTIONS - 35 U.S.C. § 101**</center>

The Examiner has rejected claims 1-23 under 35 U.S.C. § 101 stating that the claimed invention is directed to non-statutory matter.

Claims 1-9, and 12

Independent claim 1, has been amended to recite in part:

> A *computer implemented method* of *assigning objects to processing units* of a cluster of processing units, each one of the objects having an object size and an object load, each one of the processing units having a storage capacity and a load capacity, the method comprising:
> ....
> c) for each processing unit of the cluster:
> *assigning of one or more of the objects to the processing unit* in sequential order
> ...." .

The *computer implemented method* recited in the claim falls within the statutory category set forth by 35 U.S.C. § 101 because it is "tied to specific machine or apparatus." Moreover, the computer implemented method pertains to a method of assigning software objects to *processing units* and thus, a statutory machine or apparatus is central to method not just a meaningless post solution act. Thus, for at least these reasons, claim 1 and its pending dependent claims 2-9 and 12

fall within the statutory category set forth by 35 U.S.C. § 101. Applicant respectfully requests that the rejection be withdrawn.

Claims 13-18

The independent claim 13 has been amended to recite *"An article of manufacture,"* which falls within the statutory category set forth by 35 U.S.C. § 101 (See e.g., *Ex parte Bo Li*, Appeal 2008-1213 (BPAI 2008), a post *Bilski* decision by the board of patent appeals and interferences approving *Beauregard* claims as patentable subject matter). Thus at least for this reason rejections of claim 13 and its dependent claims 14-18 are requested to be withdrawn.

Claim 19

The independent claim 19 is a means for claim under 35 USC § 112 para. 6 since it recites *"a means for assigning of one or more objects to a processing unit"* which is a machine or apparatus. Thus, at least for that reason, claim 19 falls within the statutory category set forth by 35 U.S.C. § 101 and its rejection is respectfully requested to be withdrawn.

Claims 21-22

The independent Claim 21 recites "A *blade server*." Blade servers are a "machine or apparatus" and thus falls within the statutory category set forth by 35 U.S.C. § 101 and so rejection of claims 21-22 is respectfully requested to be withdrawn.

CLAIM REJECTIONS - 35 U.S.C. § 112

The Examiner has rejected Claims 1-23 under 35 U.S.C. § 112 second paragraph stating that Claims 1-23 are indefinite for failing to particularly point out and distinctly claim the invention. Independent Claims 1, 13, 19 and 21 and their dependent claims have been amended to recite "remaining load capacity of the processing unit is too small for *any of the remaining* objects of the sequence" and "*removing* the assigned objects from the sequence".

Applicant respectfully requests reconsideration of the Claims in light of the amendments.

The Examiner rejected Claims 1-4, 12-14, 18, 19, 21 under 35 U.S.C. 102(b) as being anticipated by *Leinberger* et al. as shown in (Multi-Capacity Bin Packing Algorithms with Applications to Job Scheduling under Multiple Constraints), hereinafter referred to as *Leinberger*.

Claims 1, 13, 19 and 21

Claims 1, 13, 19 and 21 have been amended to include at least one feature that is not taught or suggested by *Leinberger*. Claim 1 has been amended to include:

> *determining a load and capacity balance between the processing units of the cluster, the determining comprising: determining a first threshold and a second threshold of each of the processing units based on a number of the processing units; calculating a new remaining storage capacity as a difference between the first threshold and the aggregated size of objects assigned to the processing unit; calculating a new remaining load capacity as a difference between the second threshold and the aggregated load of objects assigned to the processing unit; and performing step 1 c) again with the new remaining storage capacity and the new remaining load capacity.*

Independent claims 13, 19 and 21 have been amended to include similar features. Applicant respectfully submits that the above feature is not taught or suggested by *Leinberger* and at least for that reason, the rejection should be withdrawn.

The above feature improves the load balancing between multiple processors by reassigning the objects to other processing units based on "*a threshold storage capacity*" and "*a threshold load capacity*" of each of the processing units by "*calculating a new remaining storage capacity as a difference between the first threshold and the aggregated size of objects assigned to the processing unit; calculating a new remaining load capacity as a difference between the second threshold and the aggregated load of objects assigned to the processing unit; performing step 1 c) again with the new remaining storage capacity and the new remaining load capacity*".

The "*threshold storage capacity*" and "*threshold load capacity*" are calculated based on a number of the processing units by "*determining a first threshold and a second threshold of each of the processing units based on a number of the processing units*".

Leinberger on the other hand teaches methods of placing d-capacity items in a group of bins based on various algorithms. *Leinberger* does not teach or suggest a way for improving the placement of the d-capacity items that are already placed in the bins. Also, *Leinberger* does not teach or suggest improving the placement of the d-capacity items in the bins by calculating a "threshold storage capacity" and "a threshold load capacity" of the bins. Thus, *Leinberger* fails to teach or suggest "***determining a load and capacity balance between the processing units***" as claimed.

Therefore, at least for the reasons discussed above, Applicant respectfully requests that the rejection of claims 1, 13, 19 and 21 be withdrawn.

Claims 2-4 and 12

Claims 2-4 and 12 depend from independent Claim 1. Applicant respectfully submits that dependent Claims 2-4 and 12 are allowable over *Leinberger* for at least the same reasons as explained above for amended independent Claim 1.

Claims 14 and 18

Claims 14 and 18 depend from independent Claim 13. Applicant respectfully submits that dependent Claims 14 and 18 are allowable over *Leinberger* for at least the same reasons as explained above for amended independent Claim 13.

CLAIM REJECTIONS - 35 U.S.C. § 103

Claims 5, 6, 15, 16, 22

The Examiner rejected the Claims 5, 6, 15, 16, and 22 under 35 U.S.C. § 103(a) as being unpatentable over *Leinberger* in further view of feedback, as demonstrated by "Schaum's Outline of Theory and Problems of Feedback and Control Systems" (hereinafter *Schaum*). According to MPEP § 2143.01 "rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change." However, the

combination of *Lienbeger* and *Schaum* fails to teach at least one element of independent claims 1, 13, 19 and 21.

For instance, Claims 1, 13, 19 and 21 have been amended to include "*determining a load and capacity balance between the processing units of the cluster, the determining comprising: determining a first threshold and a second threshold of each of the processing units based on a number of the processing units; calculating a new remaining storage capacity as a difference between the first threshold and the aggregated size of objects assigned to the processing unit; calculating a new remaining load capacity as a difference between the second threshold and the aggregated load of objects assigned to the processing unit; and performing step 1c again with the new remaining storage capacity and the new remaining load capacity*".

As discussed above, *Leinberger* fails to disclose or suggest the above listed feature of amended claims 1, 13, 19 and 21. And *Schaum* fails to cure the deficiencies of *Leinberger*. Therefore, at least for those reasons, amended independent Claims 1, 13, 19 and 21 are allowable over *Leinberger* and *Schaum*.

Claims 5 and 6 depend from independent claim 1, amended claims 15 and 16 depend from independent claim 13 and claim 22 depends from independent claim 21. Applicant respectfully submits that claims 5, 6, 15, 16 and 22 are allowable over *Leinberger* and *Schaum* for at least the same reasons explained above for amended independent claims 1, 13, 19 and 21.

Moreover, *Schaum* is directed to a feedback control system wherein an output from a system is fed back to the system via feedback transfer function to improve the output. Thus, *Schaum* either alone or in combination with *Leinberger* fails to teach or suggest a way to improve the balance between the processing units as recited in claims 5, 15 and 22, including,

> *d) determining a first largest gap between the aggregated size of objects being assigned to one of the processing units and the storage capacity of the processing unit,*
> *e) determining a second largest gap between the aggregated load of objects being assigned to one of the processing units and the load capacity of the processing unit,*
> *f) subtracting the first largest gap divided by the number of processing units from the storage capacity to provide the first threshold, and*
> *g) subtracting the second largest gap divided by the number of processing units from the load capacity to provide the second threshold.*

Further, *Schaum* either alone or in combination with *Leinberger* fails teach or suggest a way to improve the balance between the processing units as cited in claims 6 and 16, including:

d) determining the total of the sizes of the objects,

e) determining the total of the loads of the objects,

f) determining a first difference between the total of the storage capacities of the minimum number of processing units and the total of the sizes of the objects,

g) determining a second difference between the total of the load capacities of the minimum number of processing units and the total of the load of the objects,

h) subtracting the first difference divided by the minimum number of processing units from the storage capacity to provide a first threshold,

i) subtracting the second difference divided by the minimum number of processing units from the load capacity to provide a second threshold,

j) performing step 1 c) again, wherein the remaining storage capacity is determined by the difference between the aggregated size of the objects being assigned to the processing unit and the first threshold, and the remaining load capacity is determined by the difference between the aggregated load of the objects being assigned to the processing unit and the second threshold,

k) if as a result of step 6 j) there is an excess amount of memory requirement for one of the processing units that surpasses the first threshold, dividing the excess amount by the minimum number of processing units and increasing the first threshold by the result of the division, and

l) if as result of step 6 j) there is an excess load requirement for one of the processing units that surpasses the second threshold, dividing the excess load by the minimum number of processing units and increasing the second threshold by the result of the division, wherein steps 6 j), 6 k) and 6 l) are performed repeatedly until there is no such excess amount of memory requirement and no such excess load requirement.

Therefore, for at least the above reasons, Applicant requests the rejection be withdrawn for claims 5, 6, 15, 16 and 22.

Claims 7, 8, 9 and 17

The Examiner rejected the Claims 7, 8, 9 and 17 under 35 U.S.C. § 103(a) as being unpatentable over *Leinberger* in further view of Guess and Check as shows in "Math Central Guess and Check" (hereinafter *Guess and Check*). However, the combination of *Lienbeger* and *Guess and Check* fails to teach at least one element of claims 7, 8, 9 and 17.

Claims 1 and 13 have been amended to include the limitation

determining a load and capacity balance between the processing units of the cluster, the determining comprising: determining a first threshold and a second threshold of each of the processing units based on a number of the processing units; calculating a new remaining storage capacity as a difference between the first threshold and the aggregated size of objects assigned to the processing unit; calculating a new remaining load capacity as a difference between the second threshold and the aggregated load of objects assigned to the processing unit; and

performing step 1c again with the new remaining storage capacity and the new remaining load capacity.

As discussed above with respect to claims 1 and 13, *Leinberger* fails to disclose or suggest above limitation of the claims 1and 13. The Office Action alleges *Guess and Check* provides a method to find a better solution over a set of input variables. Even this is true, which is not so admitted, *Guess and Check* still fails to cure the deficiencies of *Leinberger*. Therefore, at least for those reasons independent Claims 1 and 13 are allowable over *Leinberger* and *Guess and Check.*

Claims 7, 8, 9 and 17 depend from independent claims 1 and 13 respectively, and thus are allowable over *Leinberger* and *Guess and Check* for at least the same reasons discussed above for independent claims 1 and 13 .

Claims 10-11, 20 and 23

Claims 10-11, 20 and 23 are cancelled. Therefore, Applicant respectfully requests the rejections be withdrawn for claims 10-11, 20 and 23.

CONCLUSION

For at least the foregoing reasons, Applicant respectfully submits that the Examiner's rejections have been overcome and all pending claims are in condition for allowance. Reconsideration and allowance are requested. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application.

Please charge any shortages and credit any overcharges to our Deposit Account number 11-0600.

Respectfully submitted,

Date: December 1, 2008   /Robert L. Hails, Jr./
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